PATENT
2565-0225P

IN THE U.S. PATENT AND TRADEMARK OFFICE

APPLICANT: Shusou WADAKA et al.

SERIAL NO.: **New Rule 53(b) Div. of SN 09/202,070** GROUP:

FILED: February 8, 2001 EXAMINER:

FOR: FILM ACOUSTIC WAVE DEVICE AND ITS MANUFACTURING METHOD AND CIRCUIT DEVICE

PRELIMINARY AMENDMENT

BOX PATENT APPLICATION
Assistant Commissioner of Patents
Washington, D.C. 20231

February 8, 2001

Sir:

The following Preliminary Amendment and Remarks are respectfully submitted in connection with the above-identified application

IN THE TITLE

Please change the title to --FILM ACOUSTIC WAVE DEVICE, MANUFACTURING METHOD AND CIRCUIT DEVICE--.

IN THE SPECIFICATION

Before line 1, insert --This application is a divisional of U.S. Patent Application Serial No. 09/202,070, filed December 8, 1998, which is the national phase under 35 U.S.C. §371 of prior PCT International Application No.

PCT/JP97/01442 which has an International filing date of April 24, 1997 which designated the United States of America.--

Page 1, line 8, after "as" insert --a-- and after "and" (first occurrence) insert --a--.

Page 3, line 20, delete "the"; and

line 22, change "propagates" to --propagate--.

Page 5, line 2, change "An" to --The--;

line 4, change "on a" to --to the--;

line 5, change "of" (second occurrence) to --indicia--;

line 6, delete "a figure of merit" and change "indicates the" to --shows such--;

line 7, after "is" insert --the--;

line 8, delete "the" (second occurrence);

line 9, change "having" to --have--;

line 13, after "of" (second occurrence) insert --the--;

line 14, change "electrode" to --electrode(s)--;

line 17, delete "the", after "with" insert --a-- and after "density" insert --of--; and

line 21, change "Thickness" to --Thicknesses--.

Page 9, line 9, delete "change" and after "of" insert --the--;

line 10, after "2" insert --is changed--;

line 13, change "in" to --a-- and after "means" delete "," (comma);

line 14, after "of" insert --the--;

line 16, delete "the" (first occurrence); and

line 19, after "of" insert --an--.

Page 10, line 13, after "to" insert --the--.

Page 11, line 4, after "such" insert --a--;

line 18, change "Case" to --The case--;

line 22, change "electrode" to --electrode(s)--, delete "the" (second occurrence) and delete "a"; and

line 25, after "of" insert --the-- and after "wafer" insert --,-- (comma).

Page 12, line 1, after "at" insert --a--;

line 5, delete "is";

line 6, change "thick" to --has a thickness--, after "and" delete "in" and change "is thin" to --has a thickness--;

line 8, change "was" to --is--; and

line 12, change "Disclosure of the Invention" to --Summary of the Invention--.

Page 25, line 5, delete "the" (second occurrence);

line 6, change "figure" to --Figs. 1-3--;

line 11, change "at" to --having the--; and

line 22, after "of" insert --the--.

Page 26, line 5, delete "The";

line 6, change "a" to --the--, after "of" insert --an--, change "the connecting" to --connect-- and after "19b" insert --to the upper electrodes 18a and 18b--;

line 15, delete "of";

line 17, change "simplified" to --limited to displaying several--, after "Since" delete "a" and delete "number of the";

line 19, change "much number of the" to --many--;

line 20, change "from a" to --by-- and change "of the" to --a--;

line 21, delete "the", change "of" to --a-- and change "does" to --is--;

line 22, after "not" insert --a-- and after "question" change "a" to --of the-- ; and

line 25, after "wafer," insert --the lower--.

Page 27, line 1, delete "becomes low".

IN THE CLAIMS

Please cancel claims 1-16.

Please add the following claims.

--24. A film acoustic wave device manufactured according to a method comprising:

(a) forming a ground electrode intended to be placed on top of a semiconductor substrate which is made up of one of a plurality of pieces into which a wafer is divided;

(b) forming a piezoelectric thin film on top of the ground electrode; and

(c) forming at least one upper electrode on top of the piezoelectric thin film,

wherein a pattern of the film acoustic wave device is formed as a result of steps (a)-(c), and

wherein a shape of the pattern of the film acoustic wave device is dependent upon an intended position of the semiconductor substrate on the wafer.

25. The film acoustic wave device according to claim 24, wherein a length of the at least one upper electrode is dependent upon the intended position of the semiconductor substrate on the wafer.

26. The film acoustic wave device according to claim 24, wherein a width of the at least one upper electrode is dependent upon the intended position of the semiconductor substrate on the wafer.

27. The film acoustic wave device according to claim 24, wherein the step of forming at least one upper electrode comprises forms a plurality of upper electrodes, and

wherein distances between each of the plurality of upper electrodes is dependent upon the intended position of the semiconductor substrate on the wafer.

28. The film acoustic wave device according to claim 24, wherein said step (c) further includes a step,

(c1) connecting the at least one upper electrode to a bonding pad, and

wherein a shape of the bonding pad is dependent upon the intended position of the semiconductor substrate on the wafer.

29. The film acoustic wave device according to claim 28, wherein an area covered by the bonding pad is dependent upon the intended position of the semiconductor substrate on the wafer.

30. The film acoustic wave device according to claim 24, wherein said step (c) further includes steps,

(c1) connecting the at least one upper electrode to a bonding pad; and

(c2) connecting the at least one upper electrode and the bonding pad to a connecting pattern,

wherein a shape of the connecting pattern is dependent upon the intended position of the semiconductor substrate on the wafer.

31. The film acoustic wave device according to claim 30, wherein a length of the connecting pattern is dependent upon the intended position of the semiconductor substrate on the wafer.

32. The film acoustic wave device according to claim 30, wherein a width of the connecting pattern is dependent upon the intended position of the semiconductor substrate on the wafer.

33. The film acoustic wave device according to claim 24, wherein said step (c) further includes steps,

(c1) connecting the at least one upper electrode to a bonding pad; and

(c2) connecting the at least one upper electrode and the bonding pad to a connecting pattern,

wherein the connecting pattern is formed with an air bridge.

34. The film acoustic wave device according to claim 24, wherein the method according to which the device is manufactured includes a step,

(d) forming a capacitor on the same semiconductor substrate as the film acoustic wave device,

wherein a capacitance of the capacitor is dependent upon the intended position of the semiconductor substrate on the wafer.

35. The film acoustic wave device according to claim 24, wherein the semiconductor substrate is made of gallium arsenide (GaAs); the piezoelectric thin film is made of lead titanate ($PbTiO_3$); and the at least one upper electrode is a conductor substantially made of platinum (Pt).

36. The film acoustic wave device according to claim 24, wherein the semiconductor substrate is made of silicon (Si); the piezoelectric thin film is made of lead titanate ($PbTiO_3$); and the at least one upper electrode is a conductor substantially made of Platinum (Pt).

37. The film acoustic wave device according to claim 24, wherein the piezoelectric thin film is made of PZT ($PbTiO_3$-$PbZrO_3$); and the at least one upper electrode and the ground electrode is a conductor substantially made of platinum (Pt).

38. The film acoustic wave device according to claim 24, wherein the piezoelectric thin film is made of zinc oxide (ZnO).

39. The film acoustic wave device according to claim 24, wherein the piezoelectric thin film is made of aluminum nitride (AlN).

40. The film acoustic wave device according to claim 24, wherein an inductor is intended to be formed between the semiconductor substrate and the ground electrode.

41. A method of manufacturing a film acoustic wave device, comprising:

(a) forming a ground electrode intended to be placed on top of a semiconductor substrate which is made up of one of a plurality of pieces into which a wafer is divided;

(b) forming a piezoelectric thin film on top of the ground electrode; and

(c) forming at least one upper electrode on top of the piezoelectric thin film,

wherein a pattern of the film acoustic wave device is formed as a result of steps (a)-(c), and

wherein a shape of the pattern of the film acoustic wave device is dependent upon an intended position of the semiconductor substrate on the wafer.

42. The method of manufacturing a film acoustic wave device according to claim 41, wherein a length of the at least one upper electrode is dependent upon the intended position of the semiconductor substrate on the wafer.

43. The method of manufacturing a film acoustic wave device according to claim 41, wherein a width of the at least one upper electrode is dependent upon the intended position of the semiconductor substrate on the wafer.

44. The method of manufacturing a film acoustic wave device according to claim 41, wherein the step of forming at least one upper electrode comprises forms a plurality of upper electrodes, and

wherein distances between each of the plurality of upper electrodes is dependent upon the intended position of the semiconductor substrate on the wafer.

45. The method of manufacturing a film acoustic wave device according to claim 41, wherein said step (c) further includes a step,

(c1) connecting the at least one upper electrode to a bonding pad, and

wherein a shape of the bonding pad is dependent upon the intended position of the semiconductor substrate on the wafer.

46. The method of manufacturing a film acoustic wave device according to claim 45, wherein an area covered by the bonding pad is dependent upon the intended position of the semiconductor substrate on the wafer.

47. The film acoustic wave device according to claim 41, wherein said step (c) further includes steps,

(c1) connecting the at least one upper electrode to a bonding pad; and

(c2) connecting the at least one upper electrode and the bonding pad to a connecting pattern,

wherein a shape of the connecting pattern is dependent upon the intended position of the semiconductor substrate on the wafer.

48. The method of manufacturing a film acoustic wave device according to claim 47, wherein a length of the connecting pattern is dependent upon the intended position of the semiconductor substrate on the wafer.

49. The method of manufacturing a film acoustic wave device according to claim 47, wherein a width of the connecting pattern is dependent upon the intended position of the semiconductor substrate on the wafer.

50. The method of manufacturing a film acoustic wave device according to claim 41, wherein said step (c) further includes steps,

(c1) connecting the at least one upper electrode to a bonding pad; and

(c2) connecting the at least one upper electrode and the bonding pad to a connecting pattern,

wherein the connecting pattern is formed with an air bridge.

51. The method of manufacturing a film acoustic wave device according to claim 41, further comprising a step,

(d) forming a capacitor on the same semiconductor substrate as the film acoustic wave device,

wherein a capacitance of the capacitor is dependent upon the intended position of the semiconductor substrate on the wafer.

52. The method of manufacturing a film acoustic wave device according to claim 41, wherein the semiconductor substrate is made of gallium arsenide (GaAs); the piezoelectric thin film is made of lead titanate ($PbTiO_3$); and the at least one upper electrode is a conductor substantially made of platinum (Pt).

53. The method of manufacturing a film acoustic wave device according to claim 41, wherein the semiconductor substrate is made of silicon (Si); the piezoelectric thin film is made of lead titanate ($PbTiO_3$); and the at least one upper electrode is a conductor substantially made of Platinum (Pt).

54. The method of manufacturing a film acoustic wave device according to claim 41, wherein the piezoelectric thin film is made of PZT ($PbTiO_3$-$PbZrO_3$); and the at least one upper electrode and the ground electrode is a conductor substantially made of platinum (Pt).

55. The method of manufacturing a film acoustic wave device according to claim 41, wherein the piezoelectric thin film is made of zinc oxide (ZnO).

56. The method of manufacturing a film acoustic wave device according to claim 41, wherein the piezoelectric thin film is made of aluminum nitride (AlN).

57. The method of manufacturing a film acoustic wave device according to claim 41, wherein an inductor is intended to be formed between the semiconductor substrate and the ground electrode.

58. A method of manufacturing a circuit device comprising:

forming a plurality of elements intended to be placed on a substrate, such that the pattern shape formed by at least one of the plurality of elements is dependent upon a position on which the least one of the plurality of elements is intended to be formed on the substrate.

59. A circuit device manufactured according to the method of claim 58.--

REMARKS

The specification has been amended to provide a cross-reference to the parent U.S. patent application.

The amendments to the specification have been made to place the application in better form prior to examination.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. 1.16 or under 37 C.F.R. 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH STEWART KOLASCH & BIRCH, LLP

By: _____
John A. Castellano
Registration No. 35,094

JAC/JWR:law

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000